

DATA REQUEST #22
SOIL & WATER RESOURCES

BACKGROUND

Potential impacts from erosion and siltation can result from the alteration of an area's natural drainage pattern. These impacts will be mitigated at the Niland Gas Turbine Plant site by routing all on-site and off-site stormwater into three detention basins. A large basin, designed to capture all the stormwater which originates onsite in a 24-hour, 100-year storm event, will detain onsite flows and allow them to evaporate. Two smaller basins will collect offsite stormwater, hold it long enough to lessen peak flow velocity, and discharge it to natural channels or allow it to evaporate. These two smaller basins are not designed for any particular storm event. Figure 2.2-6 shows the preliminary grading plan and pre- and post-construction drainage patterns for the site. Staff's understanding is that stormwater detention basins have limited effectiveness for trapping sediment and stormwater during large rain events. Basins must be carefully designed and maintained to prevent overflow and sediment buildup, and must be configured to discharge water at a controlled rate that will not cause downstream erosion.

DATA REQUEST

22. Provide a discussion of alternative methods for controlling off-site stormwater flows besides the use of stormwater detention basins. Identify why basins are the preferred choice against other BMPs such as lined channels with check dams.

DATA RESPONSE

22. Some alternative methods of controlling offsite stormwater flows, as listed in the California Storm Water Best Management Practice Handbook, include Infiltration, Wet Ponds, Constructed Wetlands, Biofilters, Media Filtration and Extended Detention Basins. Infiltration was rejected based upon percolation tests at the Site, which indicated a percolation rate of 0 to $\frac{1}{4}$ gallon per square foot per day. Wet ponds and constructed wetlands are alternatives that require huge storage volumes to provide reasonable TSS removal efficiency, and would not be practical for the size of the Project Site. Biofilters are not a practical solution for arid areas such as the Imperial Valley because the establishment of an appropriate biomass requires consistent irrigation throughout the year. Media filtration where sediment transport is the primary concern is impractical because of issues related to clogging, and the frequent maintenance necessary to maintain adequate hydraulic head through the system. Extended detention basins designed to capture larger storms such as the 100-year, 24-hour event were deemed cost prohibitive when compared to the overall added value. Additionally, basins of this size would likely have a larger negative impact on the desert environment.

The proposed system was selected as the best alternative based on effectiveness and cost. The system will contain and not discharge downstream during normal rainfall events. For the less frequent larger storm events that may result in the overflow of the detention basins, a system of lined or rip-rapped, broad, shallow slope channels will enhance the protection of Beal Road, and other facilities adjacent to the Site, as compared to the existing conditions.